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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] Especially this invention relates to the form transport device of the image formation equipment which enables it to prevent that material drifting occurs in image formation equipments, such as an electrophotography copying machine, by preparing the rib which shows the flank of the form of fixed form size to the form slideway of the guide plate which constitutes a form conveyance way about the skew arrester of the form in a form conveyance way, and pressing a form using an elastic body from another side.

[0002]

[Description of the Prior Art] Like the electrophotography copying machine, the image formation equipment which creates the recording paper using an electrophotography method consists of devices in which a form is sent out from the device which forms a toner image in an image read station and image support, such as a photo conductor drum, a medium tray, etc. In said image formation equipment, the feed section constituted on another object is connected to the body of equipment which prepared an image read station and the toner image formation section, and arranging two or more medium trays to said feed **** is performed. In said feed section, while holding the form with which sizes differ in two or more medium trays, according to information, such as size, a copy scale factor, etc. of a manuscript, enabling it to feed paper to the form of the size of arbitration is performed.

[0003] It is constituted as shown in drawing 7, and image formation equipment which was mentioned above arranges the feed section 10 constituted on another object in the lower part of the body 2 of a copying machine 1, connects the form conveyance way of both members to it, and is made to convey a form. The photo conductor drum 3, the developer 4, and the cleaning equipment 6 grade are prepared in said body 2 of equipment. And the scan light of the image of the manuscript transmitted from the scanner which omitted illustration is irradiated at a photo conductor drum, an electrostatic latent image is formed in a photo conductor drum, a toner is supplied from a developer 4 to the electrostatic latent image, and a toner image is formed. The toner image formed in the photo conductor drum is imprinted in a form by discharge of the imprint corotron 5, is established through an anchorage device 7 in the form which supports a non-established toner image, and it is constituted so that the discharge tray 9 may be made to turn and discharge the recording paper. Moreover, he arranges a detachable tray 8 to the flank by the side of feeding of said body 2 of equipment, and is trying to make it correspond to the activity which creates the recording paper using the form of indeterminate form size which cannot be held in a medium tray.

[0004] Two or more medium trays 11, 11a, and 11b are arranged, and the feed rollers 12, 12a, and 12b are arranged to each medium tray, and it constitutes from the feed section 10 arranged at the lower part of said body of equipment so that a form can be sent out. The form conveyance way 20 connected to the feed way of a body 2 is formed, the conveyance roller equipments 21 and 21a and 21b.... are arranged, and in said form conveyance way 20, the form sent out with the feed roller from the medium tray is turned to a body, and is sent out to the flank of said feed section 10. And the form conveyed to the upper

part of said feed section 10 is adjusted with the resist roller equipment 25 of a body 2, doubles timing with the toner image formed in a photo conductor drum, and he is trying to send it out towards the image imprint section.

[0005]

[Problem(s) to be Solved by the Invention] In image formation equipment which was mentioned above, a skew (condition of material drifting) may produce the form sent out from the feed section 10 to the guide plate which constitutes a form conveyance way sliding strongly locally, by not giving the conveyance operation in conveyance roller equipment crosswise [of a form] to homogeneity, etc. It becomes a cause that the skew produced with said conveyance roller equipment is not set up to the cross direction of a form identically [the error of the case where the shaft of a roller is not correctly arranged to the form conveyance direction in a right-angled location, and the path of a roller and the contact pressure of a roller pair] etc. Moreover, while conveying a form in said form conveyance way, that a skew arises in a form poses a big problem comparatively with the equipment in which the form conveyance way is formed for a long time, and extent of the skew of a form becomes large. So, generally with conventional equipment, amending the skew of a form using the means which regulates the point of a form by forming a loop formation in the point of a form with the resist roller equipment arranged to the direct anterior part of the image imprint section is performed. Moreover, to the conveyance roller equipment arranged on a form conveyance way, by adjusting nip pressure, the device in which it conveys in the condition of amending a skew and sliding a flank guide on one side face of a form in a form conveyance way further is established, and controlling the skew of a form is also performed.

[0006] However, when regulating the point of a form with resist roller equipment and extent of the skew of the form is large, it is difficult to demonstrate an amendment operation good, and in case the point of a form is regulated, the location of the flank of a form produces gap and the problem that the imprint location of an image is not set up correctly occurs. Moreover, adjusting nip pressure to the conveyance roller equipment arranged on a form conveyance way needs to perform very troublesome tuning in the condition that much conveyance roller equipments of a form conveyance way are arranged, and it is an almost impossible thing in fact. Furthermore, with the equipment of a side register method, even if a means to slide a flank guide on one side face of a form is easily applicable, it has the problem that it cannot respond, in the equipment of a pin center, large register method. As shown in said drawing 7 in addition to a problem which was mentioned above, the degree which a skew produces becomes very large by connecting the feed section which holds many medium trays to the body of equipment, and forming the form conveyance way for a long time, when feeding paper through the form conveyance way formed for a long time. Moreover, there is a problem that the conventional skew correction means is easily inapplicable in the interior of a form conveyance way, that there is the curved-surface section on which a form slides strongly, by forming many conveyance roller equipments, etc.

[0007]

[Objects of the Invention] This invention aims at offering the equipment which enables it to prevent generating of a skew by conveying solving the problem of the skew of a form which was mentioned above, arranging the rib for regulating the flank of a form to the guide plate which constitutes a form conveyance way, and pressing the flank of a form to a rib.

[0008]

[Means for Solving the Problem] This invention relates to the equipment which sends out a form from the feed equipment which equips two or more medium trays etc. towards the form conveyance way of the body of image formation equipment. In this invention, to the form slideway of the guide plate which constitutes the form conveyance way of said feed equipment, two or more ribs parallel to the conveyance direction of a form have been arranged, said rib was widely formed a little rather than the width of face of a form with high operating frequency, and while making said rib correspond and guiding the flank of a form, the member which presses a form towards said guide plate is arranged. Moreover, the ingredient which has flexibility constituted the member for pressing a form towards said guide plate in this invention, it was made to correspond to the nip location of the conveyance roller

equipment arranged on a form conveyance way, and is arranged while making the rib arranged to the form slideway of a guide plate correspond and arranging.

[0009]

[Function] As mentioned above, the both-sides section of a form is controllable to a rib by pressing the flank of a form in the location regulated by the rib in the form transport device of the image formation equipment of constituted this invention to the guide plate arranged on a form conveyance way using an elastic member, and it is in the middle of conveyance, and can prevent that a form produces a skew. Moreover, since the rib arranged to the guide plate of this invention can change the configuration a little and the rib member arranged to the form slideway of the usual guide plate can be used for it, it does not complicate the configuration of a guide plate. Furthermore, in the form transport device of this invention, even when a form conveyance way is constituted for a long time, a skew does not arise in a form, and an operation of adjustment by resist roller equipment can be demonstrated easily, and can be easily applied to the equipment of a pin center, large register method.

[0010]

[Example] According to the example illustrated, the form transport device of the image formation equipment of this invention is explained. In the feed section 10, the example shown in drawing 1 shows the configuration of the part which sends out a form towards a form conveyance way from a medium tray, and arranges the feed rollers 12 and 12a for performing feeding from two or more medium trays 11 and 11a and each medium tray like the case of said drawing 7 in the feed section 10. in addition, the form which said medium tray is made to correspond and is arranged -- mackerel -- it turns one sheet of form at a time to a form conveyance way, and the feed roller and Snubber of the shape of said half moon enable it to be sent out from a tray, using the Snubber device as ***** Moreover, the feed equipment for performing feeding from said medium tray makes each medium tray 11 and 11a correspond, is constituted as a feed unit, and where the guide plate for guiding the form from a tray, the guide plate which constitutes the form conveyance way 20 are included in one to one unit, it is formed. And the device which turns and feeds a form to the image imprint section of the body of equipment is constituted using the form conveyance way 20 which arranges in the condition of piling up units, such as it, in the vertical direction, and is arranged at an abbreviation perpendicular at the flank of each unit.

[0011] In the feed section 10 shown in said drawing 1, the feed way to which it shows the form P sent out from a medium tray is constituted by the inlet-port guide plate 40, the lower guide plate 41, and the up guide plate 45. And the form guided towards the form conveyance way 20 which passes along between up-and-down guide plates, and is arranged perpendicularly is conveyed towards the upper part by the conveyance roller equipment 21 arranged on said form conveyance way 20. Said conveyance roller equipment 21 consists of a driving roller 22 arranged in a fixed position, and a pinch roller 23 energized with a spring 24, sets up predetermined nip pressure among both rollers, and is made to perform a form conveyance operation. The flank guide plates 30 and 30a arranged at an abbreviation perpendicular are arranged in said form conveyance way 20, and it is made to guide conveyance of a form to it. To the form sliding surface of a plate member, said flank guide plate 30, and the lower guide plate 41 and the up guide plate 45 which constitute the feed way from a medium tray make a rib parallel to the migration direction of a form project, are prepared, and they are constituted so that a form may not slide directly to a plate member.

[0012] Although the flank guide plate 30 of this invention arranges many ribs in parallel with the conveyance direction of a form to the form sliding surface of a plate member as shown in drawing 2 and drawing 3, said rib arranges the left-hand side rib 32 and 32a.. from the center section of the cross direction of a form conveyance way through predetermined spacing with the right-hand side rib 31 and 31a.... to the longitudinal direction, respectively. The cross-section configuration of each rib prepared in said flank guide plate forms a part perpendicular to the central site of a form conveyance way, and constitutes the outside field as a slant face so that drawing 3 R> 3 may see. Made the rib prepared in said flank guide plate correspond to the width of face A1 of the form of the minimum size of fixed form size, and it has arranged the right-hand side rib section 31 and the left-hand side rib 32, was made to correspond to the width of face A2 of the form of the size of the arbitration of fixed form size, and

arranges right-hand side rib 31b and left-hand side rib 32b, respectively so that drawing 2 may see. Moreover, only delta 2 sets up spacing of the upstream of a form conveyance way widely, and the rib prepared in said flank guide plate forms the width of face of the edge of a downstream (above) widely a little rather than the width of face of the corresponding form of fixed form size, and forms a clearance to the flank of a form. And while the flank of the form guided by making it correspond to the width of face of said form, and setting up spacing of a rib contacts the vertical plane of a corresponding rib, in case it is conveyed, as a skew does not arise, it is constituted so that a guidance operation may be demonstrated. Furthermore, the roller of conveyance roller equipment was made to correspond to the upper limit section of said flank guide plate 30, and a crevice 33 and 33a.... are arranged in it.

[0013] The same rib as said flank guide plate 30 is arranged also to the lower guide plate 41 and the up guide plate 45 which are arranged on the feed way of this invention other than said flank guide plate 30. For example, in the up guide plate 45, as shown in drawing 4, the plate member for guiding a form was incurvated, it constituted, and the rib 46 is provided in the form slideway in parallel with the conveyance direction of a form at the predetermined spacing. Moreover, like the case of said flank guide plate, the rib 46 prepared in said up guide plate 45 can be made to be able to respond to the size of a form, and can be prepared. Furthermore, the elastic body 50 constituted by the plastic film member etc. is made to project to the point of said up guide plate 45, and it arranges to it, and enables it to give the operation said whose elastic body 50 turns a form to the flank guide plate 30, and presses it to it. As shown in drawing 5 and drawing 6, the elastic body 50 arranged to said up guide plate 45 is the location where a feed way joins a form conveyance way, and it is made to demonstrate the operation which turns a form to a flank guide plate and presses it by the flank of conveyance roller equipment.

[0014] In the example shown in said drawing 5, in the location where the feed way from a medium tray joins a form conveyance way, while arranging conveyance roller equipment 21, the device which regulates a form conveyance way by the point of the flank guide plate 30 and an up guide plate is constituted. Moreover, between the roller members of said conveyance roller equipment, elastic body 50 which projects from the point of an up guide plate is arranged, a form is turned to the flank guide plate 30, and is pressed, and the operation which pushes a form towards the rib of a flank guide plate is demonstrated. And it is made for the flank of Form P to have the conveyance operation over a form performed by the part in which said conveyance roller equipment is located in the condition of sliding on each regulation side of Ribs 31c and 32c, by turning a form to the flank guide plate 30 by elastic body 50, and pressing, as shown in drawing 6. Therefore, in the roller member of conveyance roller equipment, when neither the case where nip pressure is not set as homogeneity, nor the sliding friction of the form in a feed way is homogeneity crosswise [of a form], it can prevent that un-arranging [whose a form produces a skew] occurs.

[0015] Moreover, in said drawing 5 and the example shown in 6, setting up spacing of the rib which is made to correspond to the width of face of a form, and is arranged to a flank guide plate, by making it correspond to spacing of said rib, and arranging an elastic body, etc., the flank of a form can be pressed to the slideway of a flank guide plate, and the operation which regulates the flank of a form can be demonstrated in the good condition. In addition, since the thickness of the form used for a common copy is about 0.1mm, the rib prepared in the guide plate of this invention can be set as height of about 1mm. Furthermore, a film member comparatively thin also as said elastic body can be used, and the operation which regulates a form can be demonstrated by setting up comparatively weakly the force which presses a form to a flank guide plate. And a form is guided, giving the press operation by the elastic body 50 to the rib prepared in the flank guide plate so that the flank of a form may make it slide, as shown in said drawing 2. Therefore, as shown in said drawing 6, even if Ribs 31b and 32b are in the center-section side in the condition corresponding to Ribs 31c and 32c in the flank of the both sides of a form, the flank of the form is conveyed, sliding on the regulation side by the corresponding ribs 31c and 32c. Moreover, even if the clearance between spacing delta 2 is between the regulation side of said rib, and the flank of a form, since the clearance delta 2 does not pose a big problem to the skew of a form, it can perform a form conveyance operation in the good condition by regulating with the rib of said flank guide plate.

[0016] In addition, as mentioned above, many ribs can be made to be able to project to a flank guide

plate, and the protrusion height of said rib can be set as arbitration in a means to prevent the skew of a form, according to the property of a form transport device etc. Moreover, only the thing made to correspond to the flank of the form of fixed form size other than that the thin film member of for example, the product made of PET (polyethylene terephthalate) resin is used for the elastic body which the rib of said flank guide plate is made to correspond, and presses a form, or being able to use a film member with the comparatively strong waist of other arbitration, making arrangement spacing of the elastic body etc. correspond to a rib, and preparing a large number can also be arranged. Furthermore, it is not limited to the part which gives the conveyance operation over a form with conveyance roller equipment, and the location which arranges said elastic body can also be prepared in the location of the arbitration of a form conveyance way.

[0017]

[Effect of the Invention] Since it uses the member of a device which was mentioned above, by pressing the flank of a form in the location regulated by the rib to the guide plate arranged on a form conveyance way using an elastic member, the form transport device of this invention can regulate the both-sides section of a form to a rib, is in the middle of conveyance, and can prevent that a form produces a skew. Moreover, since the rib arranged to the guide plate of this invention can change the configuration a little and the rib member arranged to the form slideway of the usual guide plate can be used for it, it does not complicate the configuration of a guide plate. And in the form transport device of this invention, even when a form conveyance way is constituted for a long time, a skew cannot arise in a form, an operation of adjustment by resist roller equipment can be demonstrated easily, and the effectiveness of skew prevention of the form in the equipment of a pin center, large register method can be demonstrated good.

[Translation done.]